

- 12 -

CLAIMS

1. A deformable mirror comprising a reflective element provided on a substrate that is secured to a deformable element, wherein the substrate comprises at least one channel having a pair of ports both located around the peripheral edge of the substrate.

5

2. A deformable mirror according to claim 1, wherein the substrate comprises a plurality of channels, each having ports located around the peripheral edge of the substrate and wherein the channels are interconnected by a chamber.

10

3. A deformable mirror according to claim 2, wherein the plurality of channels intersect to form the chamber.

4. A deformable mirror according to claim 3, wherein the channels extend radially to intersect at the centre of the substrate.

15

5. A deformable mirror according to claim 3, wherein the channels extend from a central portion of the substrate to the edge of the mirror in an offset arrangement, thereby intersecting to form a substantially ring-shaped chamber.

20

6. A deformable-mirror mount and a deformable mirror according to any preceding claim, wherein the mount has a body with a central aperture defined by a supporting surface sized and shaped to support the mirror when installed, and wherein the mount is provided with at least a pair of channels that terminate to face the ports in the mirror when the mirror is installed, the channels of the mirror and the mount being connected via flexible seals.

25

- 13 -

7. A deformable-mirror holder and a deformable mirror according to claim 6, wherein the flexible seals are O-rings that are positioned to surround the channels in the mirror and mount where they terminate to face each other.
- 5 8. A deformable-mirror holder and a deformable mirror according to claim 6 or claim 7, wherein the mirror comprises a plurality of channels that terminate to form a plurality of ports in the peripheral edge of the substrate and wherein a channel is provided in the mount for each port, the channel terminating to face its associated port and wherein alternate channels
- 10 communicate to an inlet and an outlet.
9. A deformable-mirror holder and a deformable mirror according to any of claims 6 to 8, wherein the aperture of the mount is defined by a plurality of flexible beams, each flexible beam having an end shaped to provide the
- 15 supporting surface and a flexible portion that connects the beam's end to the mount's body.
10. A deformable-mirror holder and a deformable mirror according to claim 9, wherein at least one of the flexible beams is generally L-shaped such that
- 20 one leg of the L-shape provides the flexible portion and the other leg of the L-shape provides the support surface of the beam's end.
11. A deformable-mirror holder and a deformable mirror according to claim 10, wherein the internal corner of the L-shaped beam has a shoulder that
- 25 extends part of the way along both legs such that the mirror when installed is supported from below by the supporting surface of the flexible beam and from the side by the shoulder of the flexible beam.

- 14 -

12.A deformable-mirror holder and a deformable mirror according to any of claim 9 to 11, wherein the channels terminate at a gap between pairs of flexible beams.

5 13.A deformable-mirror holder and a deformable mirror according to claim 12, wherein the channels are provided by plugs inserted into passages provided in the mount's body.

10 14.A deformable-mirror holder and a deformable mirror according to claim 13, wherein the flexible beams are shaped to accommodate the plugs and the O-rings that connect the plugs to the mirror's peripheral edge.

15 15.A deformable-mirror holder and a deformable mirror according to claim 13 or 14, wherein the channels in the plugs communicate with a pair of channels provided in an outer surface of the mount's body that extend around the aperture.

20 16.A deformable-mirror holder and a deformable mirror according to claim 15, wherein channels in alternate plugs communicate with one or the other of the channels in the mount's body in turn.

17.A deformable mirror as substantially described hereinbefore with reference to any of Figures 1 to 11 of the accompanying drawings.

25 18.A deformable-mirror holder and a deformable mirror as substantially described hereinbefore with reference to any of Figures 1 to 11 of the accompanying drawings.